

Application No. 10/815,142

Amendments to the Claims:

Listing of Claims:

1. (CANCELED)

2. (CANCELED)

3. (CANCELED)

4. (CANCELED)

5. (NEW) A method for real time measuring of print substrate sheet bending stiffness and thereby estimated basis weight of different basis weight print substrate sheets for sheet separating control comprising,

applying a vacuum between a stack of print substrate sheets of unknown basis weight and a corrugator having a plurality of substantially spaced apart extending ribs of different extensions providing a variable sheet engaging profile,

said vacuum being sufficient to raise the topmost said print substrate sheet in said stack up against said corrugator and to deform said print substrate sheet against said spaced apart extending ribs of different extensions,

forming with said vacuum a variable deformed profile of said print substrate sheet against said spaced apart extending ribs of different extensions which deformed profile varies with said sheet bending stiffness of said print substrate sheet,

sensing said variable deformed profile of said print substrate sheet against said spaced apart extending ribs of different extensions to provide electrical signals corresponding to the basis weight of said print substrate sheet, and

comparing said sheet basis weight related electrical signals with a lookup table of stored information to provide a variable sheet separating control signal for separating said print substrate sheets from said stack thereof with variable sheet separating forces related to their estimated basis weight.

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6. (NEW) The method for real time measuring of print substrate sheet bending stiffness and thereby estimated basis weight of different basis weight print substrate sheets for sheet separating control of claim 5, wherein said variable sheet separating forces comprise varying the pneumatic force level of a pneumatic sheet separating and feeding system separating and feeding said print substrate sheets from said stack thereof.

7. (NEW) Apparatus for real time measuring of print substrate sheet bending stiffness and thereby estimated basis weight of different basis weight print substrate sheets for sheet separating control comprising,

- a sheet corrugator having a plurality of substantially spaced apart extending ribs of different extensions providing a variable sheet engaging profile,

- and a vacuum system for applying a vacuum between a stack of print substrate sheets of unknown basis weight and said corrugator,

- said vacuum being sufficient to raise the topmost said print substrate sheet in said stack up against said corrugator and to deform said print substrate sheet against said spaced apart extending ribs of different extensions,

- forming with said vacuum a variable deformed profile of said print substrate sheet against said spaced apart extending ribs of different extensions which deformed profile varies with said sheet bending stiffness of said print substrate sheet,

- a sensing system for sensing said variable deformed profile of said print substrate sheet against said spaced apart extending ribs of different extensions to provide electrical signals corresponding to the basis weight of said print substrate sheet, and

- a lookup table of stored information for comparing said related electrical signals therewith to provide a variable sheet separating control signal for separating said print substrate sheets from said stack thereof with variable sheet separating forces related to their estimated basis weight.

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8. **(NEW)** The apparatus of claim 7, further including a pneumatic sheet separating and feeding system for providing said variable sheet separating forces for separating and feeding said print substrate sheets from said stack thereof.